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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,536	11/13/2003	Darryl John Becker	ROC920030227US1	9179

7590 01/08/2007

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EXAMINER	
SIEK, VUTHE	
ART UNIT	PAPER NUMBER
2825	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/712,536	BECKER ET AL.	
	Examiner	Art Unit	
	Vuthe Siek	2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-13 and 15-19* is/are rejected.

7)☒ Claim(s) *4,14 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to application 10/712,536 filed on 11/13/2003. Claims 1-20 remain pending in the application.

Claim Objections

2. Claims 2-10 and 12-16 are objected to because of the following informalities: "A method" and "A computer program product" should be changed to --The method-- and --The computer program product--, in order to provide formal claimed language. Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title.

Claims 11-16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. It appears that the claimed invention is missing a critical element "a computer recording medium" (Fig. 7) for storing a computer program product for implementing...in a computer system...

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-3, 5-13 and 15-19 are rejected under 35 U.S.C. 103(a) as being obvious over Vitek et al. (7,047,515 B1).

6. As to claims 1, 11 and 17, Vitek et al. teach substantially similar claimed invention of a method/a computer program product stored in a computer readable medium/a apparatus for implementing high frequency return current paths utilizing decoupling capacitors (bypass capacitors) within electronic packages on a multi-layers printed circuit board. Mainly Vitek et al. teach the claimed invention of inserting or adding additional decoupling capacitors that solve the same problem as the instant invention (Fig. 4-7). Clearly Fig. 5 shows decoupling capacitors 534, 538, 540 and 536 are added. By providing the bypass capacitors (decoupling capacitors) 534, 538, 540 and 536, the return current does not have to divert to an arbitrary local decoupling capacitor far away from the chip devices 510, 512 for transitioning between reference planes. Thus, the return current 544 follows a short path closer in length to the signal current 541, 542, 543 path, resulting in a smaller and controlled return current path that leads to (i) a smaller loop area created by the signal current and its return current, and (ii) a smaller difference in path length between the signal current path and its return current path (improved balance). The reduced length and the better balance of the length of the signal path improve the signal performance on the signal path. The signal current 541, 542, 543 transitioning through routing vias 546 and 548 are known to be signal vias as recited in the claims. It noted that the added decoupling capacitors 534, 538, 540 and 536 would provide high frequency return current paths. Although, Vitek et al. does not specifically recite that calculating ratio of signal vias (transitioning signal

541, 542, 543 through routing vias 546 and 548) to return current path for each of plurality of cells and adding the decoupling capacitors 534, 538, 540 and 536 when identifying that each cell having the calculated ratio greater than a target ratio, such limitations are obvious to practitioners in the art from the teachings of Vitek et al. because such condition solve the same problem faced by Vitek. That is, the return current 544 follows a short path closer in length to the signal current 541, 542, 543 path, resulting in a smaller and controlled return current path that leads to (i) a smaller loop area created by the signal current and its return current, and (ii) a smaller difference in path length between the signal current path and its return current path (improved balance). The reduced length and the better balance of the length of the signal path improve the signal performance on the signal path.

7. As to claims 2, 12 and 18, the claimed limitation is shown in Fig. 5 (multi-layers board layout, voltage reference planes 506 and 508.

8. As to claims 3, 13 and 19, the claimed limitations are inherently within the art as shown in Fig. 5.

9. As to claim 5, the claimed limitation is inherently within the multi-layers printed circuit board designed as taught by Vitek et al. (see description of Fig. 4 and 5, col. 9-10).

10. As to claims 6-10 and 15-16, the claimed limitations are shown in Fig. 5 (see description of Fig. 4 and 5, col. 9-10).

Allowable Subject Matter

11. Claims 4, 14 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and rewritten to overcome 101 rejection above (regarding to claims 11-16). The prior art of record does not teach or fairly suggest the return current path analyzer computer program receives a user selected value for said target ratio; said target ratio defining a maximum desired ratio of signal vias to return current paths; and receives a user selected grid dimensions input defining said set cell size.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vuthe Siek whose telephone number is (571) 272-1906.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Chiang can be reached on (571) 272-7483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vuthe Siek

Vuthe Siek
VUTHE SIEK
PRIMARY EXAMINER